

# Deuteron Polarimetry

Muon self-analyzes through weak decay.

Deuteron requires that a target be introduced into the ring.

This affects beam:

Multiple Coulomb scattering fills ring aperture, loses beam.

Energy loss changes average momentum.

IUCF experience:

GAS JET TARGET: In this application, problems are  
large aperture, short magnet gap lead to poor vacuum  
targets are thin, long beam lifetime but modest rate  
energy loss leaves beam degraded but still circulating

SOLID TARGET mounted on a movable ladder  
creates moving, off-center source point

## MEASUREMENT PLAN

Inject beam to store for about 1 second.

Using solid target, inspect beam early and late in cycle.

### GOAL

To be sensitive to EDM of  $10^{-24}$  e-cm after 1 second,  
need to measure and angle of 0.12 mrad.